

# **2020 Sustainable Lexington**

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Cities for Climate Protection  
Evaluation & Recommendation

# Acronyms

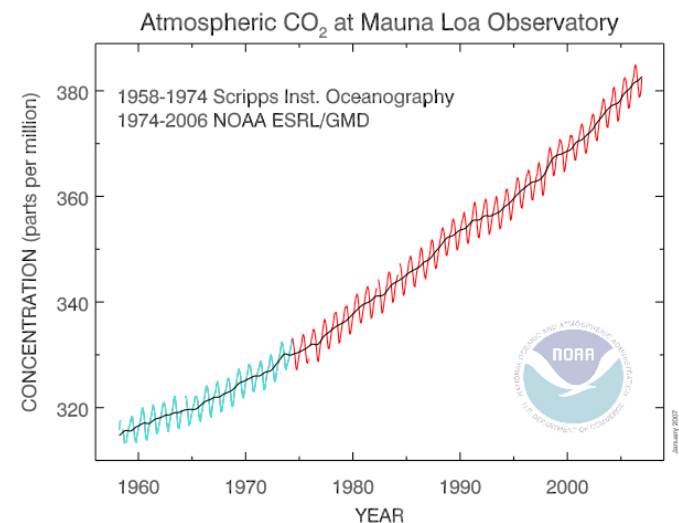
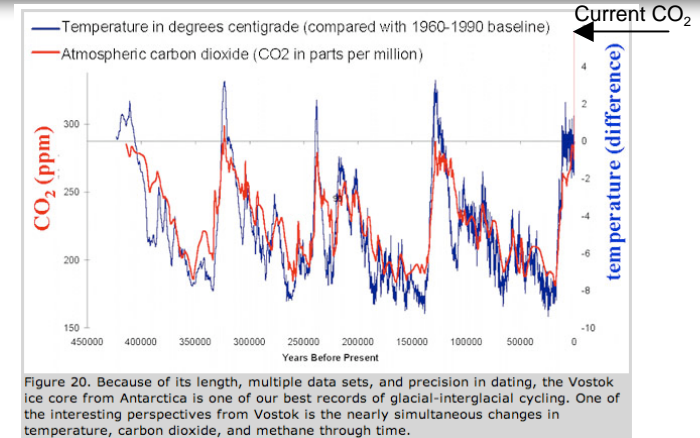
- ICLEI - International Council for Local Environmental Initiatives
- MCAN – Massachusetts Climate Action Network
- CCP – Cities for Climate Protection is a campaign run by ICLEI
- GHG - Greenhouse Gas Emissions
- LEEDS - Leadership in Energy and Environmental Design Standards

# Sustainable Development

- “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”  
UN Department of Economic and Social Affairs, Division for Sustainable Development

# Major Issue

- “Carbon dioxide is accumulating in the atmosphere much faster than scientists expected, raising fears that humankind may have less time to tackle climate change than previously thought.” “Surge in carbon levels raises fears of runaway warming” by David Adam Environment correspondent Guardian 1/19/2007



# Recommendations

- That Lexington develop and execute a Climate Action Plan
- That Lexington join the “Cities for Climate Protection” program
- That Lexington establish a “Sustainable Lexington” committee to oversee the development and implementation of the Climate Action Plan

# Why a Climate Action Plan?

- We are responsible community members
  - ◆ We have a moral obligation to act to protect our values and society from the threat of rapid climate change. Uncontrolled CO<sub>2</sub> emissions threaten radical climate warming that can only be mitigated by action at every level of government, including local government.
- Energy costs = “the next health care”
  - ◆ Rapidly rising energy costs will become a greater and greater budget problem for both the town and for home owners.
  - ◆ A climate action plan can provide real savings on energy costs by quantifying town investments and returns on energy savings measures.

# Cities for Climate Protection (CCP) is the leading way local governments have produced climate action plans

- Local Communities developing CCP climate action plans
  - ◆ Arlington
  - ◆ Belmont
  - ◆ Newton
  - ◆ Somerville
  - ◆ Reading
- We found no viable alternative resource in use by Mass. cities and towns other than CCP.
- The state's Department of Environmental Protection makes state grants available to communities that are participating in CCP.
- We are recommending that Lexington join Cities for Climate Protection

# Benefits of Creating a Climate Action Plan

- Improve community livability through promotion of sustainable practices
- Create a legacy of community leadership
- Provide a focus for local action on climate change
- Build the local economy and possibly create jobs
- Save taxpayer dollars
- Improve air quality and public health
- Establish metrics to use for increasing sustainability



# Benefits of Joining CCP

ICLEI provides local governments with access to:

- **Software products and associated training** to assist with the quantification of greenhouse gas reductions and other benefits of climate protection planning.
- **Access to a professional network of peers** through listservs, newsletters, conferences, and workshops (sold out conference in CT this week).
- Software, toolkits, online resources, case studies, fact sheets, policy and practice manuals, and guides on approaches that other local governments have successfully used to reduce greenhouse gases.
- **Training workshops for staff and elected officials** on how to develop and implement effective long-term emission reduction strategies.
- **Technical assistance** in designing and implementing actions to reduce greenhouse gas emissions.
- **Notification of relevant grant opportunities**, including eligibility for Massachusetts grants.
- **Assistance in publicizing local climate protection successes.**

# Milestones of the CCP Campaign (5 step process)

1. Conduct a baseline inventory of global warming pollutants
2. Develop a local Climate Action Plan (CAP) to implement actions that reduce global warming pollution
3. Establish a target to lower emissions
4. Implement the local Climate Action Plan
5. Measure, verify and report performance

# CCP Process

- Engaging in the 5 step process
  - ♦ Community commitment to reduce global warming emissions
- Completing milestones
  - ♦ Not necessarily linear
  - ♦ Can be undertaken concurrently
  - ♦ Time depends on
    - Size and complexity of community
    - Availability of data, staff, and resources

# Currently 27 other cities and town in Massachusetts are participating in the CCP process

- We have talked to:
  - ♦ Arlington
  - ♦ Belmont
  - ♦ Cambridge
  - ♦ Medford
  - ♦ Newton
  - ♦ Reading
  - ♦ Somerville
- Brief Summaries of their experiences are highlighted in the next series of slides

# Arlington

- Joined CCP in 2000
- Climate Action Plan completed 2006
- Implemented several municipal energy saving initiatives saving 100K+/- annually, 2000-2006
- Recommends town employee (part-time) needed to draft Climate Action Plan
- Process bogged down by being too broad in beginning: focused on more than climate change

# Belmont

- Joined CCP in January 2006
- Expects to complete Climate Action Plan by Earth Day, 2007
- Has held public forums, received a Mass DEP grant for an Anti-idling campaign
- Active community involvement and active support by town employees noted

# Cambridge

- Contact - John Bolduc, Environmental Engineer with City of Cambridge Community Development Department
- Cambridge joined ICLEI in 1999
- CCP offered
  - ♦ Good way to organize environmental programs around sustainability
  - ♦ Liked CCP's practical structure and usefulness
- ICLEI/CCP supported by community. City Manager was very supportive
- Climate Action Plan took 2 years due to lack of experience in Massachusetts. It should be easier now.
  - ♦ Paid intern, provided by ICLEI, performed data gathering

# Cambridge Continued

- Emission reduction goal
  - ♦ 20% by 2010
  - ♦ Emissions still rising due to development
  - ♦ Zoning encourages green buildings but Cambridge has no jurisdiction over building codes
- Other benefits of CCP program
  - ♦ Other departments have gotten involved
  - ♦ Improvements in fleet vehicles
  - ♦ Recycling consistent with goals
  - ♦ City Hall Annex renovated into LEED-certified Gold building
  - ♦ Payback easier for municipal and education organizations. Tax benefits can improve payback for private organizations
  - ♦ Process has enabled coordination of information sharing between business, civic, and citizen organizations.
  - ♦ Harvard has an active green building program
  - ♦ One great thing about ICLEI is that we can easily talk to cities around the country and learn from their experience.



# City of Medford

## CCP Member since 1999

- Climate Action Plan Achievements
  - ◆ Convert mercury vapor street lights to high pressure sodium vapor
  - ◆ Hormel Stadium energy efficiency retrofit
  - ◆ Convert traffic lights to LEDs
  - ◆ Energy Star procurement policy
  - ◆ Municipal building conversions from electric/oil heat to gas.
- Partial/Ongoing
  - ◆ Development of municipal energy efficiency building codes
  - ◆ Annual municipal building energy audits
  - ◆ Fleet vehicle fuel efficiency purchase policy
  - ◆ Fleet vehicle alternate fuel purchase policy

# Newton

- Green decade program began 1990
- ICLEI provides valuable tools
  - ♦ Intern supported baseline measurement
  - ♦ Plan presented February 2005
  - ♦ Plan identified key actions
- Bottom line motivator for City is economic
  - Energy costs rising sharply
  - No leveling off in sight
    - Chief Financial officer now willing to listen to 7-year payback
  - Rebates (e.g., NSTAR) and Grants (e.g., State) can support process
- Town focusing on
  - Street lighting (low hanging fruit)
  - Town buildings (schools and community centers)
  - Schools

# Newton South High School



# Reading

- Joining ICLEI (2004) gave us a method to attack the problem:
  - ♦ Five milestones
    - Used intern for initial data collection
    - Currently preparing climate action plan.
  - ♦ Software package
- Created a sense of empowerment and involvement in solving the problem
  - Raises local awareness of the problem
- Are taking actions and collecting data in parallel
  - 1-2-3 pledge to reduce transportation, home energy, food energy
  - Change a light bulb-change for the planet
  - Weekly newspaper column

# Somerville

- Contact with ICLEI - Vithal Deshpande, City Engineers Office
- Member of CCP since 2001
- Joined to be part of global solution
  - ♦ Cost savings have been a byproduct
- Somerville Climate Action group pre-dated ICLEI
- Data gathering
  - ♦ Intern from Tufts
  - ♦ 10 weeks process
  - ♦ Residential component estimated
  - ♦ Staff responsibilities not time consuming
  - ♦ One challenge was choosing a baseline year
  - ♦ Choose baseline of 1997 for municipal buildings and 1999 for business and residential
- Goal 7% reduction by 2010 as compared to 1990
- Young professionals and students have been most interested groups
- Committee on Energy and Climate Change administers climate action plan
  - ♦ Main focus is ESCO project - private company implementing energy savings projects to achieve goal. Sharing in savings.

# Cape Cod Commission

- Contact Tana Watts
  - ◆ Expressed interest in Lexington effort in order to interest Barnstable to become a member of ICLEI.
  - ◆ Provincetown became a member of ICLEI several weeks ago and is racing forward

# Lexington Tasks:

## Conduct a baseline inventory

- Identify and quantify the greenhouse gas emissions produced by government and community based on total energy usage.
- Inventory and forecast trends
  - ♦ provide a benchmark
  - ♦ Measure progress
- Emissions analysis identifies activities and quantities of pollution generated by each sector of the community, i.e. municipal, commercial, residential
- Inventory
  - ♦ Energy management
  - ♦ Recycling and waste reduction
  - ♦ Transportation
  - ♦ Land use
- ICLEI supplies
  - ♦ Software for developing inventory
  - ♦ Technical training and support
  - ♦ Fee-for-service project work

# Conduct a baseline inventory

## continued

- Use ICLEI's Clean Air/Climate Protection Software
  - ◆ Calculate emissions and set targets for emissions reductions
  - ◆ Track and quantify emissions
  - ◆ Develop emissions scenarios to inform planning process
- Sample inventories are available
  - ◆ Sonoma County Greenhouse Gas Inventory
  - ◆ City of Somerville, MA Greenhouse Gas Inventory



# Establish a Lexington Target to Lower Emissions

- Create a tangible goal and metric to guide planning and implementation
- Target of U.S. Mayor's Climate Protection Agreement: reduce to 7% below 1990 levels by 2012
- Targets of most participants: 15% or higher within 10 year period
- Another possible target: 3% reduction per year
- ICLEI network provides data from U.S. and international cities
- ICLEI offers
  - ♦ access to best practices
  - ♦ Technology transfer
  - ♦ Cost/benefit analysis of measures
- ICLEI's Clean Air/Climate Protection software
  - ♦ Estimates scale of action needed to achieve target, helps determine if it is realistic

# Develop the Lexington Climate Action Plan (CAP)

- The CAP is a roadmap to reduce CO2 emissions to achieve projected costs savings and to facilitate climate protection measures
- The CAP consists of:
  - ♦ Implementation timeline
  - ♦ Costs and financing mechanisms
  - ♦ Assignments to town departments
  - ♦ Actions to implement recommendations
- Areas often covered in a CAP
  - ♦ Energy Management
  - ♦ Transportation
  - ♦ Waste Reduction
  - ♦ Land Use
- Common implementation measures
  - ♦ Energy efficiency improvements to municipal, commercial and private buildings and homes
  - ♦ Streetlight retrofits
  - ♦ Motor vehicle mitigation measures
  - ♦ Installation of renewable energy applications

# Implement the Lexington Climate Action Plan

- Successful implementation depends on
  - ♦ Management and staffing; requires a town employee liaison, possibly the same person(s) working with the energy committee
  - ♦ Financing
  - ♦ Realistic timeline
  - ♦ Stakeholder involvement, including town departments
  - ♦ Community support
- ICLEI best practices and case studies
  - ♦ Best practices and case studies
  - ♦ Information about costs, staffing, and benefits
  - ♦ Staff expertise
  - ♦ Network of cities offers peers and practitioners

# Measure, Verify, and Report Performance

- Monitor reductions to measure progress
- Tracking progress
  - ◆ Builds community support
  - ◆ Informs all participants
  - ◆ Drives further community investment
  - ◆ Ensures integrity and accuracy
- ICLEI Clean Air/Climate Protection Software
  - ◆ Supports monitoring and reporting
  - ◆ Quantifies reductions and cost savings

# Can this be done in Lexington?

- Strong community support evidenced by participation in 2020 Task Force, activities of GWAC, Energy Conservation Committee and climate change initiatives of numerous Lexington religious congregations.
- Needs Active support of Selectmen, Town Manager, and School Dept.
- Needs local sustainability committee
- Needs town liaison with sustainability committee and ICLEI organization

# **Greenhouse Gas Reduction and Energy Conservation Efforts in Lexington**

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# Electric Utility Ad-hoc Committee

- Formed in 2002
- Focused on setting up a municipal electricity distribution company (or “muni”) in Lexington
  - ♦ Muni would buy electricity, including from “green” sources
  - ♦ Residents, businesses and town/schools would buy from muni
  - ♦ Muni could support conservation and GHG reduction efforts
  - ♦ Local control promotes better service and planning
  - ♦ 20-30% lower electricity rates in neighboring communities with existing munis (e.g. Concord, Belmont, Wellesley)
  - ♦ Lexington muni would be a full participant in MTC’s funding mechanism for energy conservation and renewables
  - ♦ MCAN has formally endorsed the enabling legislation
- Data Gathering
  - ♦ Gathering and organizing >100 Lexington electric accounts
  - ♦ Has helped energy committee and will support CCP program

# Energy Conservation Committee

- Supporting ongoing significant operational changes by LPS Facilities Manager to reduce school's energy consumption
- Actively reviewing energy design and energy management plans for new DPW building
- GHG reduction projects
  - ◆ DPW is replacing incandescent streetlights with CFLs
  - ◆ ECC proposed that Municipal and School Administrations use CFLs whenever the alternative is available
- Could be home for sustainability committee



# Permanent Building Committee

- Sustainable Design Policy
  - ◆ Written in Fall 2005
  - ◆ Board of Selectmen adopted the policy
  - ◆ Policy sets LEED Silver as a goal for the Town for new construction and renovations
  - ◆ Encourages private development
- Fiske and Harrington Schools both have geothermal heating systems
  - ◆ Harrington's gas bill was \$14,000 over 12 months period. This was a large reduction in gas. Electric bill rose so savings unclear.

# Permanent Building Committee continued

- DPW project - Architects, HKT, are taking holistic approach for sustainable design
  - Storm water management- bio-retention for washing trucks
  - Water efficient landscaping
  - Water use reduction - low flow fixtures
  - Building energy systems
  - Storage and collections of recyclables
  - Construction Waste Management
  - Use of low emitting materials
  - Use of natural light to reduce need for artificial light
  - Energy efficient mechanical systems to reduce air conditioning bills, sunscreen planting

# Religious Organizations

- Great deal of work being done
- Inputs received from
  - ◆ Temple Isaiah
  - ◆ Temple Emunah
  - ◆ Hancock Church UCC
  - ◆ First Parish Unitarian
  - ◆ Follen Church Unitarian
  - ◆ Church of Our Redeemer Episcopal

# Temple Isaiah

- GHG Reductions Projects
  - ◆ Motion detector lights in many rooms
  - ◆ Use of CFLs
  - ◆ Recycles
  - ◆ Reduced temperature, heat off
  - ◆ Youth Group and Social Action Committee running programs: Showing “An Inconvenient Truth”, promoting “Change a Bulb” campaign

# Temple Emunah

- Data Gathering
  - ◆ NStar Audit
    - Results: efforts very good now
- GHG reduction projects
  - ◆ New wing built with GHG emissions in mind
  - ◆ Automatic lights and CFLs throughout the facility

# Hancock Church UCC

- GHG reduction projects
  - ◆ Initiating Hancock Environmental Action Team (HEAT) to educate the congregation and seek GHG reductions within church
  - ◆ Electric lights replaced with Fluorescent lights several years ago
  - ◆ Reducing temperatures throughout building
  - ◆ Installed setback thermostats throughout the building

# First Parish Unitarian Church

- Seeking “Green Sanctuary” designation from Unitarian Universalist Association (UUA)
  - ◆ Must conform to at least 12 of 16 criteria
  - ◆ Seeking “Idle Free” designation from Town for parking lot
  - ◆ Offering “Simplicity” course- advanced level
  - ◆ Sponsoring “swap” table at church and at the Farmer’s Market
  - ◆ Using recycled paper. Banning use of paper & styrofoam at coffee hour and functions
  - ◆ Energy audit. Plan to upgrade heat and hot water systems. Use CFLs
  - ◆ Promoting “Smaller Footprints” program to help congregation make changes at home and report back
  - ◆ Participation in March on Washington for GHG reduction
  - ◆ Participating in UUA “Statement of Conscience”

# Follen Church Unitarian

- Using CFLs
- Setback Thermostats installed
- Recycling paper, China vs disposable products



# Church of Our Redeemer

- Member of Massachusetts Interfaith Light and Power
- Audited by MILP and NSTAR
- Upgraded heating system and new thermostats

# Article 40 Engine Runup Committee

- Initiated anti-idling campaign (working with Health Department)
- Anti-idling signs in school and soon in Town
- Possible local anti-idling bylaw

# Transportation Advisory Committee

- Goal: promote transportation with means other than Single Occupancy Vehicles
- Supports and promotes public transportation
  - ♦ Promotes MBTA and The Ride services
  - ♦ Encourages businesses to provide Transportation Management Associations
  - ♦ Supports and oversees Lexpress - 17,500 trips/year
    - New 2008 contract will adhere to newest Federal and State guidelines
    - Drivers prohibited from idling buses per State Law
- Participant in Traffic Mitigation Group
  - ♦ Town committee consisting of Town Staff from engineering and Planning Offices, Bicycle, Sidewalk, Selectmen, and Planning Board
  - ♦ Provide unified approach to reduce SOV's, traffic management, working with developers, making alternative transportation options safer

# Bicycle Advisory Committee

## Friends of Lexington Bikeway

- Obtained grant funding and organized improvement projects in conjunction with Lexington Conservation Stewards
  - ♦ Connect neighborhoods to schools
  - ♦ Make walking and bicycling more popular
  - ♦ Board-walks near Diamond, Clarke, and Bowman
- Early promotion of Safe Routes to Schools program now part of Sidewalk Committee
- Worked with Planning Board to produce Transportation Element of Town's Comprehensive Plan.
  - ♦ Identified bike routes and trails to be developed
- Advise Selectmen on ways to increase bicycle use

# Lexington Conservation Stewards

- Participated with Bicycle Advisory Committee on trail improvement projects providing alternative routes to schools.
- Co-sponsoring the West Lexington Greenway Corridor Project, a proposed biking/hiking trail network connecting town conservation lands west of Rte. 128.

# Conservation Commission

- Protects wetlands
- Manages over 1340 acres of conservation land

# Lexington Global Warming Action Coalition

- Sponsor of public lecture series on Global Warming
  - ◆ Lester Brown, Elizabeth Kolbert, Mark Bowen, etc
- Sponsoring film series at Cary Memorial Library
- Regular Lexington Minuteman column on climate change and global warming
- Lexington Challenge program
  - ◆ Households calculate greenhouse gas footprint
  - ◆ Reduce carbon emissions
  - ◆ Purchase carbon offsets
- Lexington High School Solar Challenge
  - ◆ 2 kW solar panel
- Web site - [www.lexgwac.org](http://www.lexgwac.org)

# Keyspan

- Have offered free energy audits in the past
- Recently sent mailing promoting energy efficient boilers, furnaces, hot water heaters, gas fireplace inserts and air quality devices
- Noted Freewatt system made by Honda for hot air systems. Run meter backwards while heating.
  - ♦ <http://www.keysfanservices.com>



# NSTAR

- Home analyzer
- No “Green Energy” program offered

# Town of Lexington

## Greenhouse Gas Reduction and Energy Conservation Efforts

- Public Works:
  - ♦ Planned purchase of energy-efficient vehicles in FY08
  - ♦ Reduced solid waste as a result of weekly curbside recycling and composting of yard waste and Christmas trees
  - ♦ Lexpress RFP specifies energy-efficient buses
  - ♦ Multi-year program to replace old windows and doors on Town buildings
  - ♦ Street lights being replaced with compact fluorescent bulbs
  - ♦ Center traffic signal uses low power usage, long life LED bulbs
- Police:
  - ♦ Testing fuel-efficient vehicles for cruisers
- Library:
  - ♦ Evaluating HVAC systems in new building to ensure efficiency
- Purchasing:
  - ♦ Considering cost/benefit of biodiesel fuel – Town vehicles, Lexpress, Liberty Ride, school buses
- Recreation:
  - ♦ Evaluating capital project to install energy-saving lighting at Center tennis courts
- Municipal offices, schools:
  - ♦ Internal recycling of office paper
- Public buildings:
  - ♦ New Harrington & Fiske Schools have geothermal heat pumps
  - ♦ Proposed DPW building will meet LEED Silver standards

# Town of Lexington

## Energy References in Review of Annual Reports

- 2000
  - ♦ Lighting Options Committee
    - Realized goal of owning streetlights
    - Continued work to identify lower energy lighting options
- 2001
  - ♦ Lighting Options Committee submitted final report to Selectmen containing recommendations of lighting sources and analyses
- 2002
  - ♦ Lighting Options Committee advised Selectmen on lighting issues
  - ♦ Innovative street lighting demonstration for energy efficient and high quality municipal lighting
- 2003
  - ♦ Selectmen established Energy Conservation Committee
  - ♦ Received 80% grant from NSTAR for energy-efficient lighting in Town Office Building. Installed fixtures at night
  - ♦ Member of Metropolitan Area Planning Council (MAPC). MAPC adopted 15 “smart growth” principles designed to promote development while protecting the environment, encouraging social and economic equity, and conserving energy and water resources

# Town of Lexington

## Energy References in Review of Annual Reports Cont'

- 2004
  - ♦ No “energy” references
- 2005
  - ♦ Energy Conservation and Lighting Options Committees merged to identify energy saving programs in existing assets
  - ♦ Sustainable (Green) Design Policy recommended by Permanent Building Committee was adopted for all new construction. Renovations and new projects over 5,000 sq. ft. will meet Leadership in Energy and Environmental Design (LEED) Silver standards.
  - ♦ Design and construction of new Fiske School might meet LEED Gold Standards
  - ♦ Farmer’s Market regular weekly feature in Center
  - ♦ One of the roles of the Public Building Maintenance Department is to monitor energy use.

# Next Steps

- Recommend to 2020 Committee that they Request to Selectmen that Lexington formally join the CCP program.
  - ◆ Cost: \$600 annual dues
  - ◆ Town employee designated as liaison
- Recommend that a Sustainable Lexington Committee be established as determined by the Selectmen and Town Manager to oversee the development and implementation of a Climate Action Plan for Lexington.

# Sustainable Lexington

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## Vision and Implementation

# Lexington Town-Wide Vision Statement - 1999

- The Town of Lexington prides itself on being a great place to live. Residents and visitors alike characterize it as a vibrant and active community, which places a high value on learning at all ages. Its residents and employees welcome the diversity of people who are attracted to Lexington and choose to call it their home and/or place of employment.
- Lexington is, and will stay, a primarily residential community with a tradition of offering quality, broad-reaching municipal services. It is committed to preserving and maintaining a sense of community that includes its historic tradition, its public and private open spaces, and its public support for civic life. It strives, however, to maintain a range of affordability. Residents recognize that these qualities are always difficult to balance.
- An open and structured process of community conversation and long-term planning help the town remain forward-looking. Major elements, which are consistently addressed and evaluated, include: fiscal responsibility; sustainability of natural and human resources; transportation issues; education, and regional cooperation and integration. Residents are invested in and rely on this process as they reconcile competing needs and interests.

# Lexington Climate Action Plan

## Coordinating Organizations

- Several Lexington organizations have responsibilities for energy and pollution
  - ♦ Town: Energy Conservation Committee
  - ♦ Community: Lexington Global Warming Action Coalition
- We propose that the Sustainable Lexington committee be established as an ad-hoc Selectmen's committee for a limited time to develop the climate action plan and educate the community, after which its activities and structure will be further reviewed.



# Climate Action Plan

## Proposed Organization Responsibilities

- Tasks of the Sustainable Lexington Committee
  - ◆ Supervise/conduct town-wide greenhouse gas inventory
  - ◆ Supervise/create town-wide a Climate Action Plan that sets goals for municipal, residential, and commercial sector emission reductions
  - ◆ Supervise implementation of Climate Action Plan
    - Coordinate with Energy Conservation Committee regarding municipal sector emission reduction efforts
    - Coordinate with GWAC and other town affiliated organizations (houses of worship, etc.) regarding residential sector emission reduction efforts
    - Work directly with town committees (Planning Board, etc.) to develop By-Law revisions, town policies, etc that encourage reducing emissions and reducing energy consumption in commercial and other sectors

# Next Steps

- 2020 Committee accepts the report of the Sustainability Committee and votes to recommend action to the Selectmen.
- The 2020 Committee presents the report to the Board of Selectmen and the Planning Board.